Virginia's RN Workforce Requirements 2000 – 2020:

Research Report in Response to

Virginia HB2818

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Virginia RN Workforce Analysis
Conducted to Inform SCHEV Report in Response to HB 2818

- Utilized federal Nurse Supply Model (NSM) & Nurse Demand Model (NDM) to derive projections
- NDM is two-stage multivariate model using cross-sectional data that controls for market factors
  - Rate of utilization of health services using general services demand model
  - Rate of workforce demand requirements per unit of service and number of units of service utilized

Consulting Economist: Tim Dall

The Lewin Group, Falls Church Virginia

Federal Nursing Demand Model

- The Nursing Demand Model (NDM), developed by the National Center for Health Workforce Analysis (NCHWA), projects demand for RN FTE through 2020. NDM projects demand for RNs in 12 employment settings, and population demand for health care services in 6 settings

- NDM has two major components
  - data and equations used to project future demand for health care services (e.g., hospital inpatient days)
  - data and equations used to project future nurse staffing intensity (e.g., FTE RNs demanded per inpatient day). Key variables in the model are Census Bureau population projections by state, age, and sex; state-level estimates of healthcare utilization and nurse staffing patterns in the base year (2000); measures of patient acuity; nurse wages; rates of uninsured and managed care enrollment; Medicaid and Medicare payment rates; and characteristics of the healthcare operating environment.
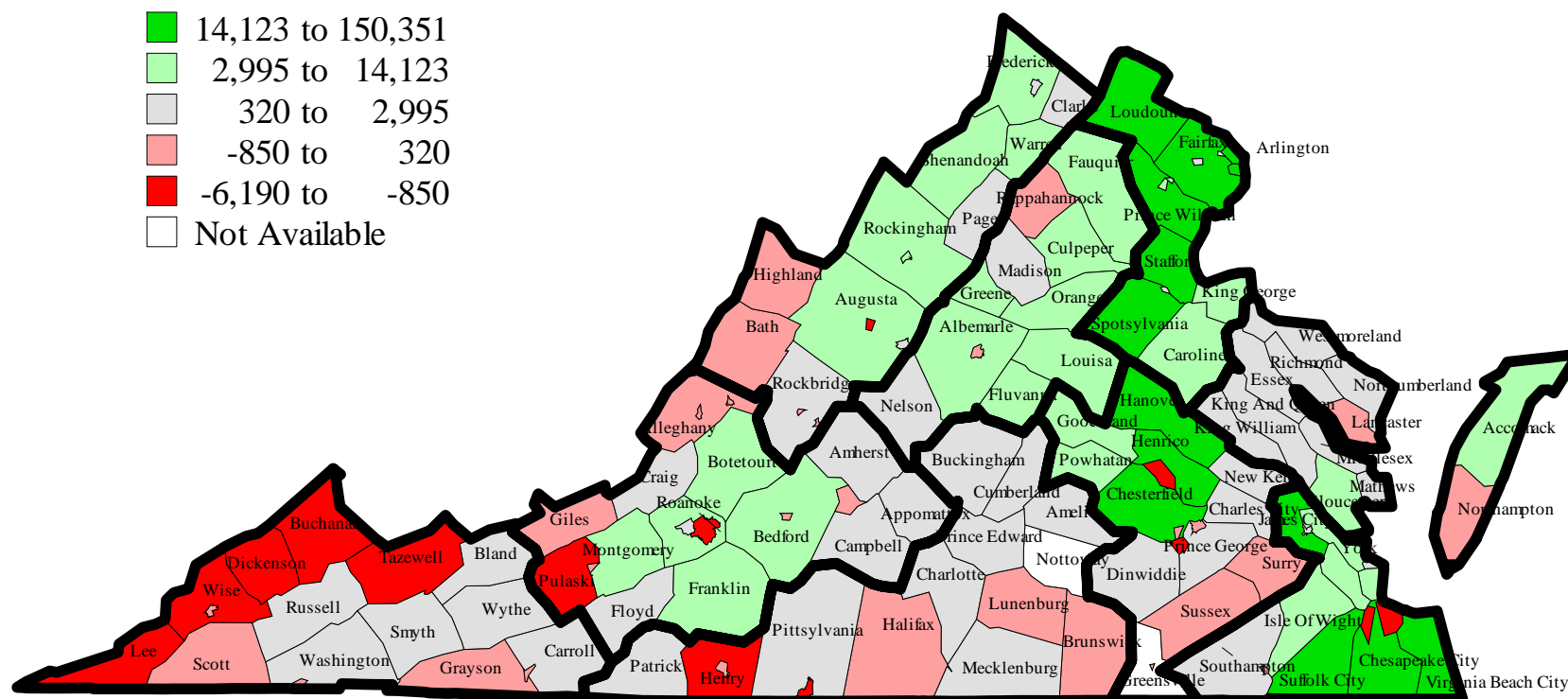
Federal Nursing Supply Model

- Nursing Supply Model (NSM), developed by the National Center for Health Workforce Analysis
  - produces state-level projections of the supply of registered nurses (RNs) through 2020 (NSSRN)
  - tracks nurses by age, state, and education level (diploma or associates degree, baccalaureate degree, and graduate degree)
  - models the number of newly licensed RNs, across-state migration patterns, employment patterns, and retirement patterns.
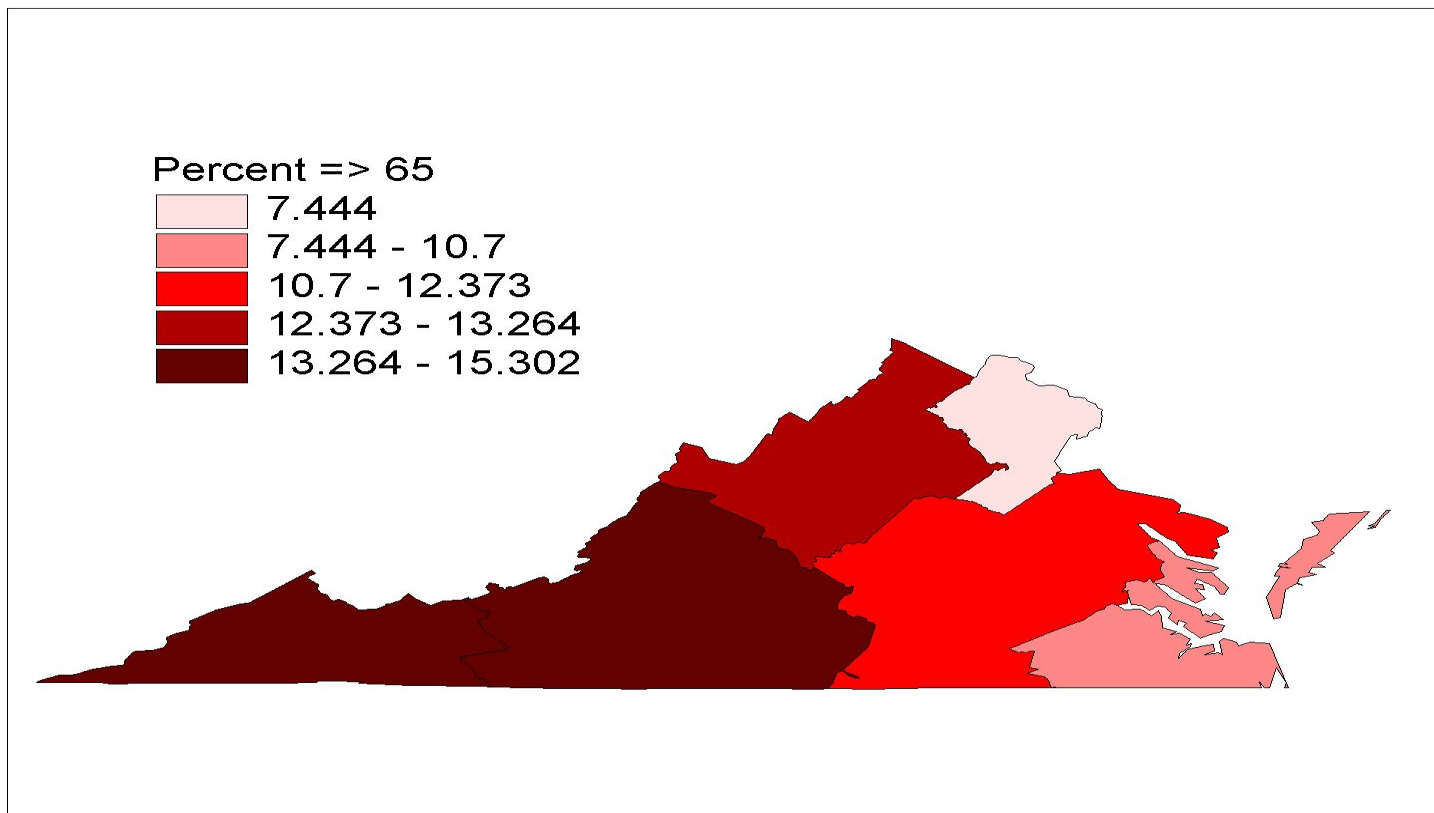
Data Utilized for Study

Data Source	Data
National Sample Survey of RNs	Virginia Regional Data Files for NSSRN
VA Board of Nursing	NCLEX Results Nursing Education Programs
Virginia Tech Survey	Licensure Survey of RNs, LPNs and CNAs
Va Dept. of Health, HR System Snapshot	Demand Data: State Nursing Positions/employees
Va Health & Hosp. Information (VHHI)	Demand Data: Service utilization, includes nursing home care, excludes Managed Care
SCHEV Faculty Salary Survey	Survey data on nursing faculty salaries
Virginia Nursing Schools Survey	VA Nursing Programs enrollment and graduations (AACN survey adapted: Extant and GMU collected data)

Projected Number Change in Total Population, 2000-2010

- █ 14,123 to 150,351
- █ 2,995 to 14,123
- █ 320 to 2,995
- █ -850 to 320
- █ -6,190 to -850
- □ Not Available

Frederick
Clarke
Loudoun
Warren
Fairfax
Arlington
Shenandoah
Fauquier
Rappahannock
Prince William
Rockingham
Page
Culpeper
Stafford
Highland
Madison
King George
Augusta
Greene
Orange
Westmoreland
Bath
Albemarle
Spotsylvania
Caroline
Richmond
Louisa
Essex
Northumberland
Rockbridge
Fluvanna
Hanover
King And Queen
Lancaster
Nelson
Goochland
King William
Accomack
Alleghany
Henrico
Amherst
Buckingham
Powhatan
New Kent
Middlesex
Botetourt
Mathews
Craig
Cumberland
Charles City
James City
Roanoke
Chesterfield
Northampton
Giles
Appomattox
Amelia
Gloucester
Bedford
Prince Edward
Prince George
York
Buchanan
Montgomery
Campbell
Nottoway
Dinwiddie
Surry
Dickenson
Tazewell
Bland
Pulaski
Charlotte
Lunenburg
Sussex
Isle Of Wight
Wise
Russell
Wythe
Floyd
Pittsylvania
Halifax
Brunswick
Chesapeake City
Lee
Smyth
Carroll
Patrick
Mecklenburg
Southampton
Suffolk City
Scott
Washington
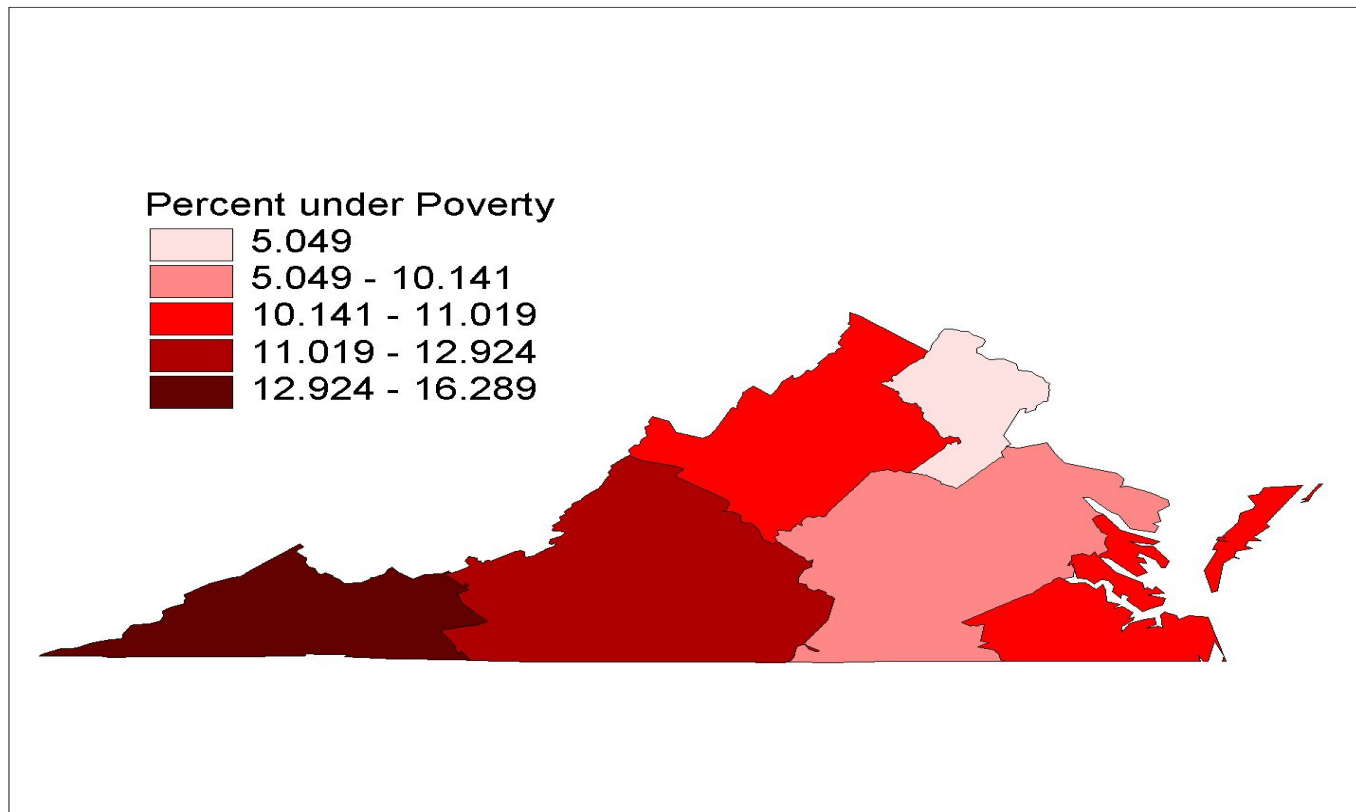Grayson
Henry
Greensville
Virginia Beach City

Data Source: Virginia Employment Commission

Commonwealth of Virginia Population Over Age 65 by Region

Data Source: 2000 Census

Commonwealth of Virginia Percent Federal Poverty by Region

Percent under Poverty
- 5.049
- 5.049 - 10.141
- 10.141 - 11.019
- 11.019 - 12.924
- 12.924 - 16.289

Data Source: 2000 Census

Percent Employed in Professional, Education, Health, and Social Service Industries, 2000

- 34.0% to 49.2%
- 28.6% to 34.0%
- 23.3% to 28.6%
- 21.0% to 23.3%
- 17.0% to 21.0%

Virginia = 29.9%
Data Source: 2000 Census
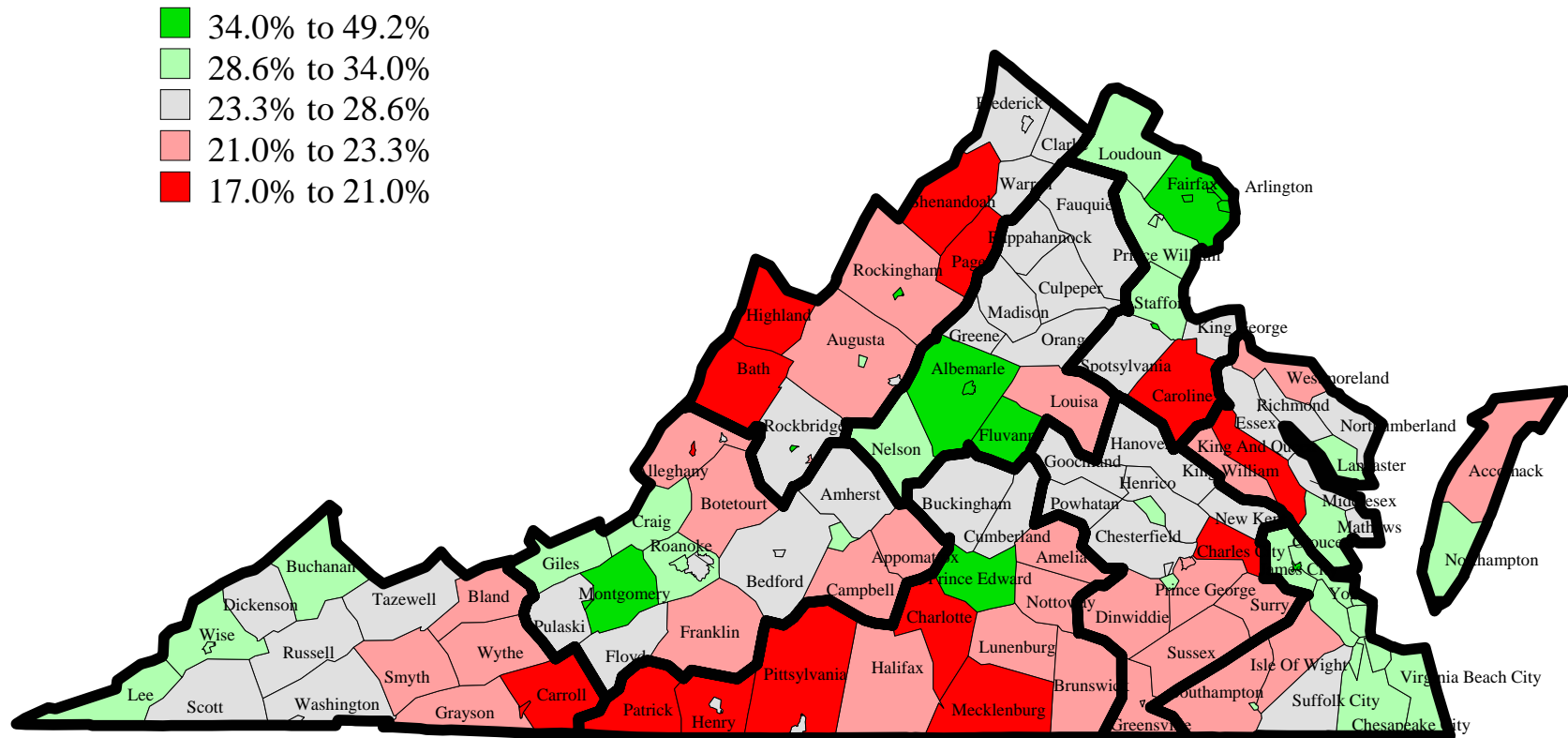
Projected RN Demand (FTE)

Virginia

Setting	Projected FTE RN Demand			Projected Growth	
	2000	**2010**	**2020**	**2000 to 2010**	**2000 to 2020**
Total	49,171	58,581	70,243	19%	43%
Hospitals	30,483	35,955	43,022	18%	41%
Nursing Facilities	2,981	4,147	5,507	39%	85%
Doctor's Offices	4,307	5,074	5,828	18%	35%
Home Health	2,446	3,549	5,218	45%	113%
Other	8,953	9,856	10,668	10%	19%

United States

Setting	Projected FTE RN Demand			Projected Growth	
	2000	**2010**	**2020**	**2000 to 2010**	**2000 to 2020**
Total	2,001,198	2,346,388	2,822,388	17%	41%
Hospitals	1,239,539	1,427,876	1,698,873	15%	37%
Nursing Facilities	172,750	224,006	286,355	30%	66%
Doctor's Offices	155,001	178,789	204,674	15%	32%
Home Health	132,016	187,482	275,633	42%	109%
Other	301,891	328,235	356,853	9%	18%

Data Source: NDM projections, National Center for Health Workforce Analysis, BHPr, HRSA

RN Demand (FTE)
State and Region 2000-2020

	2000	2005	2010	2015	2020
Blue	5,437	6,218	6,763	7,268	7,773
Central	10,007	11,018	12,021	13,141	14,266
Hampton	11,276	12,153	13,079	13,977	14,877
Northern	12,894	15,097	17,257	18,982	20,698
Roanoke	7,199	7,778	8,266	8,774	9,281
Southwest	2,360	2,450	2,536	2,627	2,717
STATE TOTAL	49,173	54,714	59,922	64,769	69,612

Data Source: Virginia NDM
projections

Virginia RN Supply and Demand (FTE)
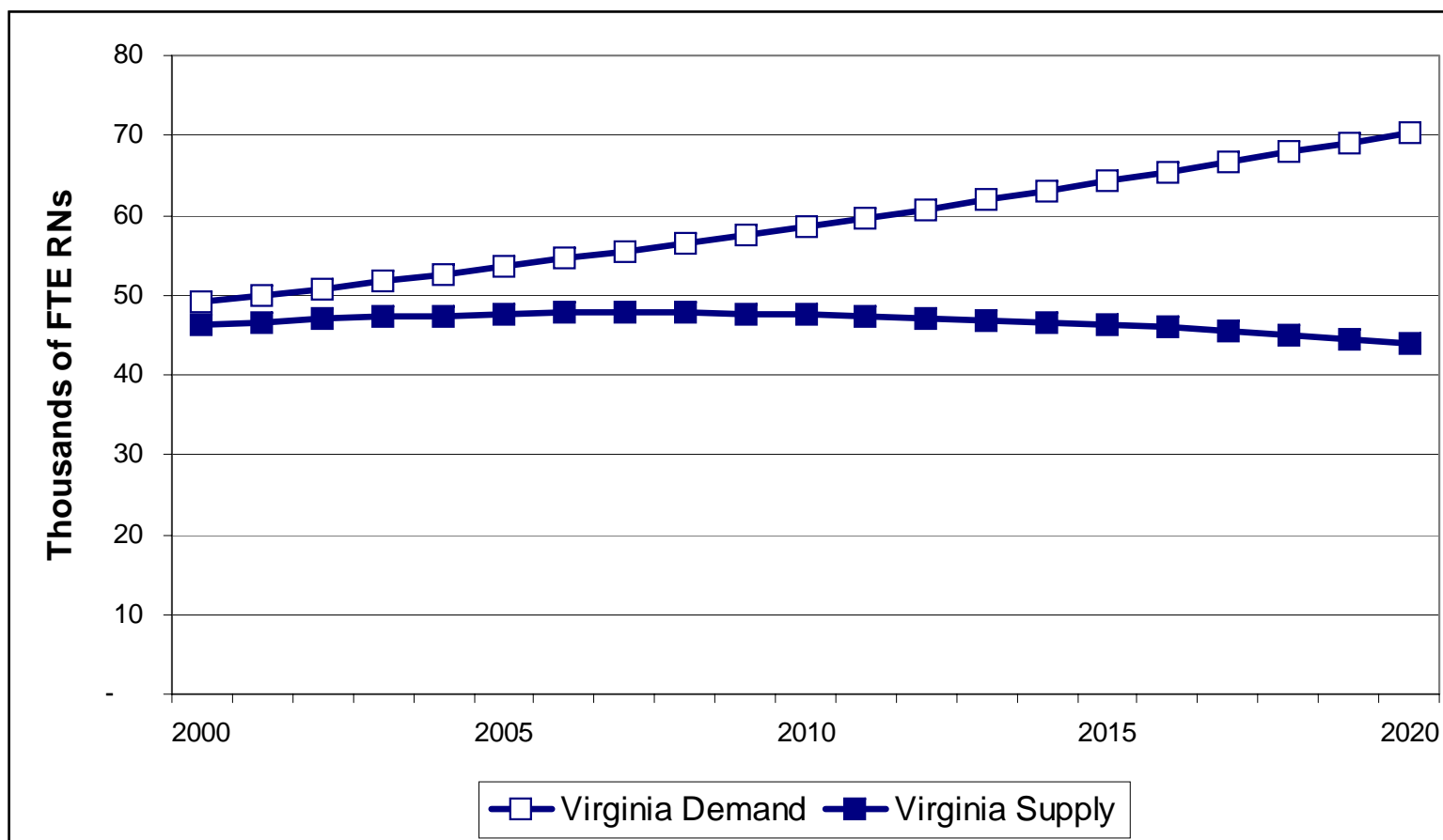
Source: National Center for Health Workforce Analysis, BHPr, HRSA

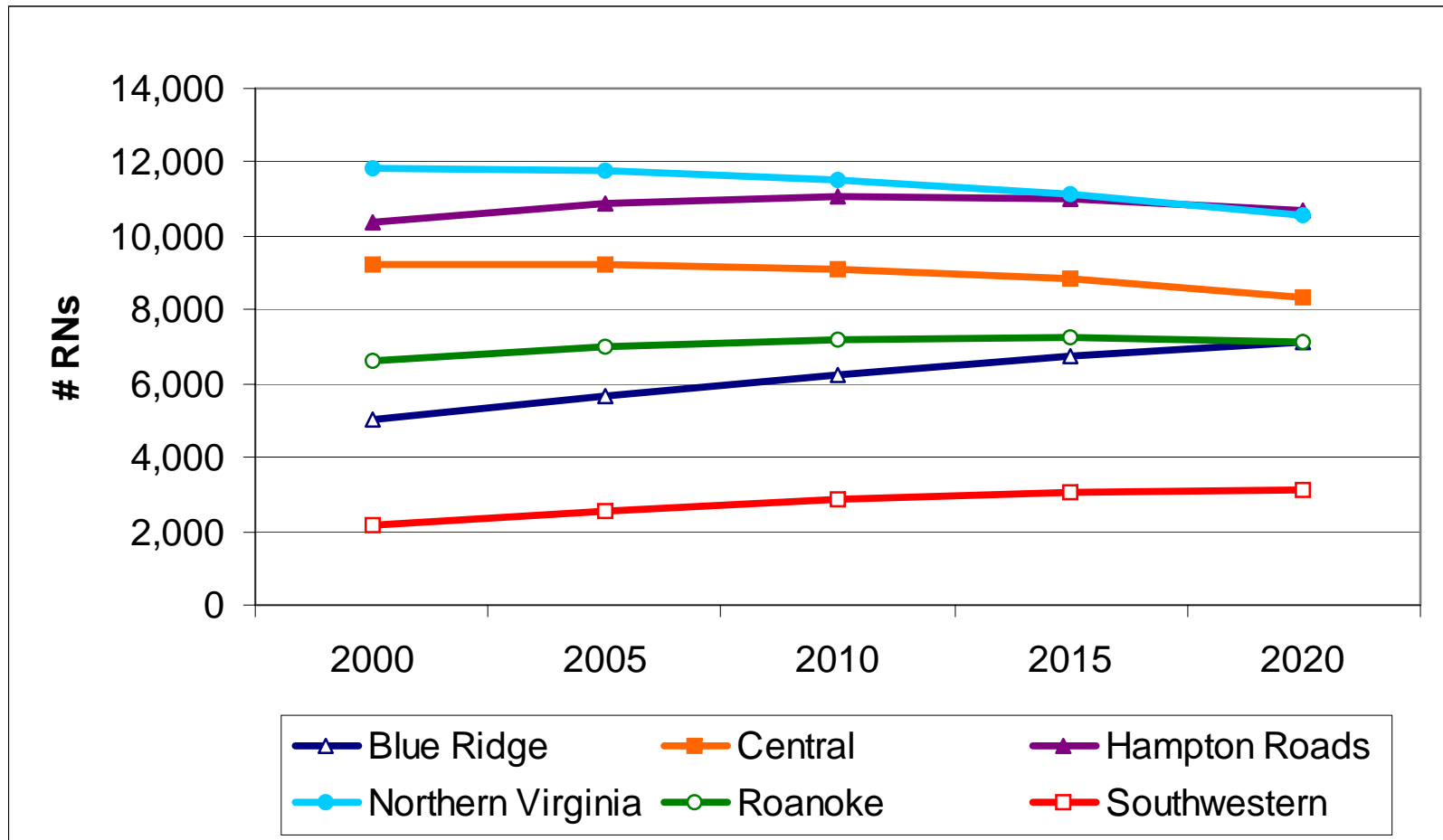# VA. RN Supply and Demand FTE per 100,000 Population

Legend: Virginia Demand, Virginia Supply, U.S. Demand, U.S. Supply
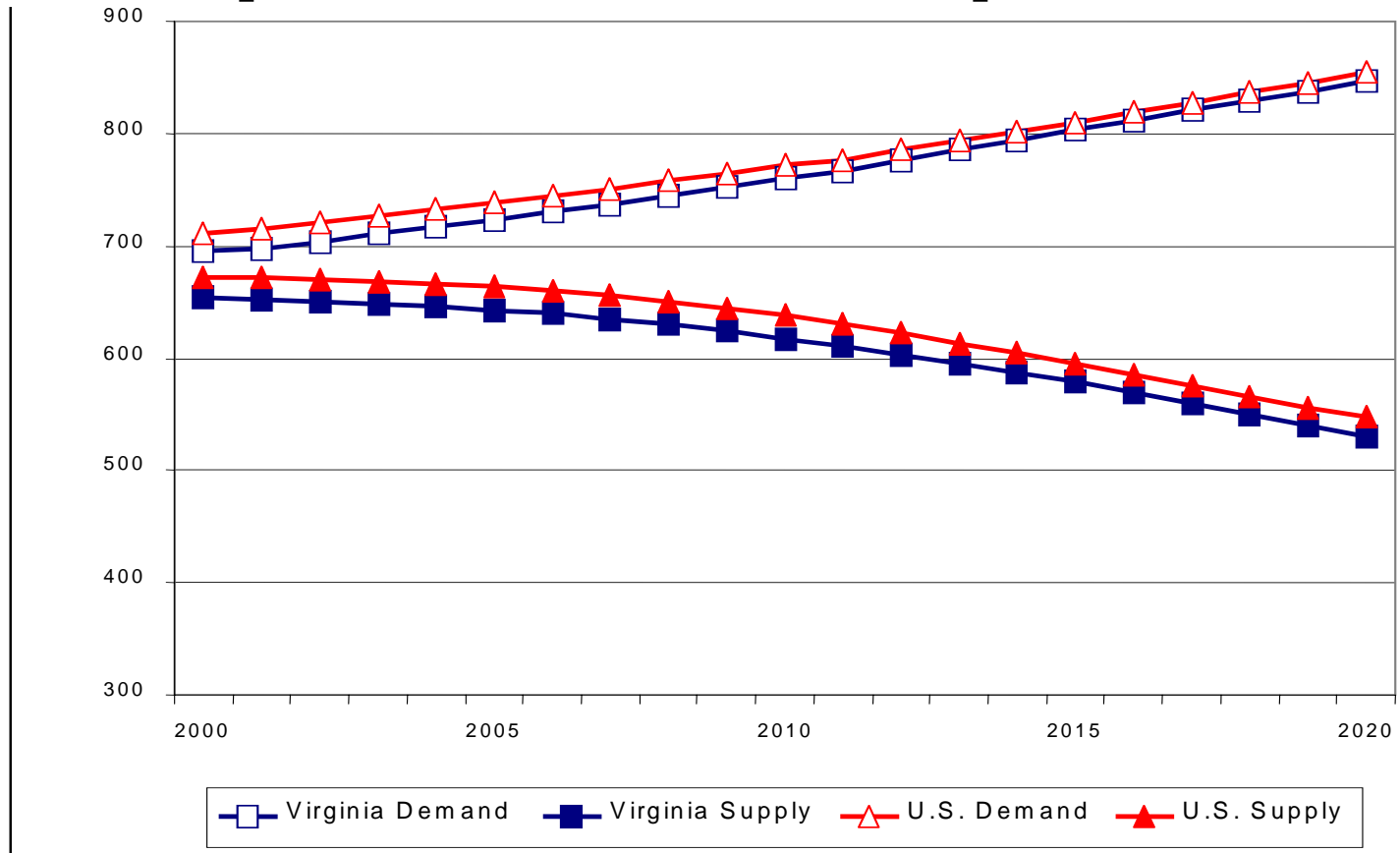
Data Source: National Center for Health Workforce Analysis, BHPr, HRSA

Virginia RN Demand by Region 2000-2020
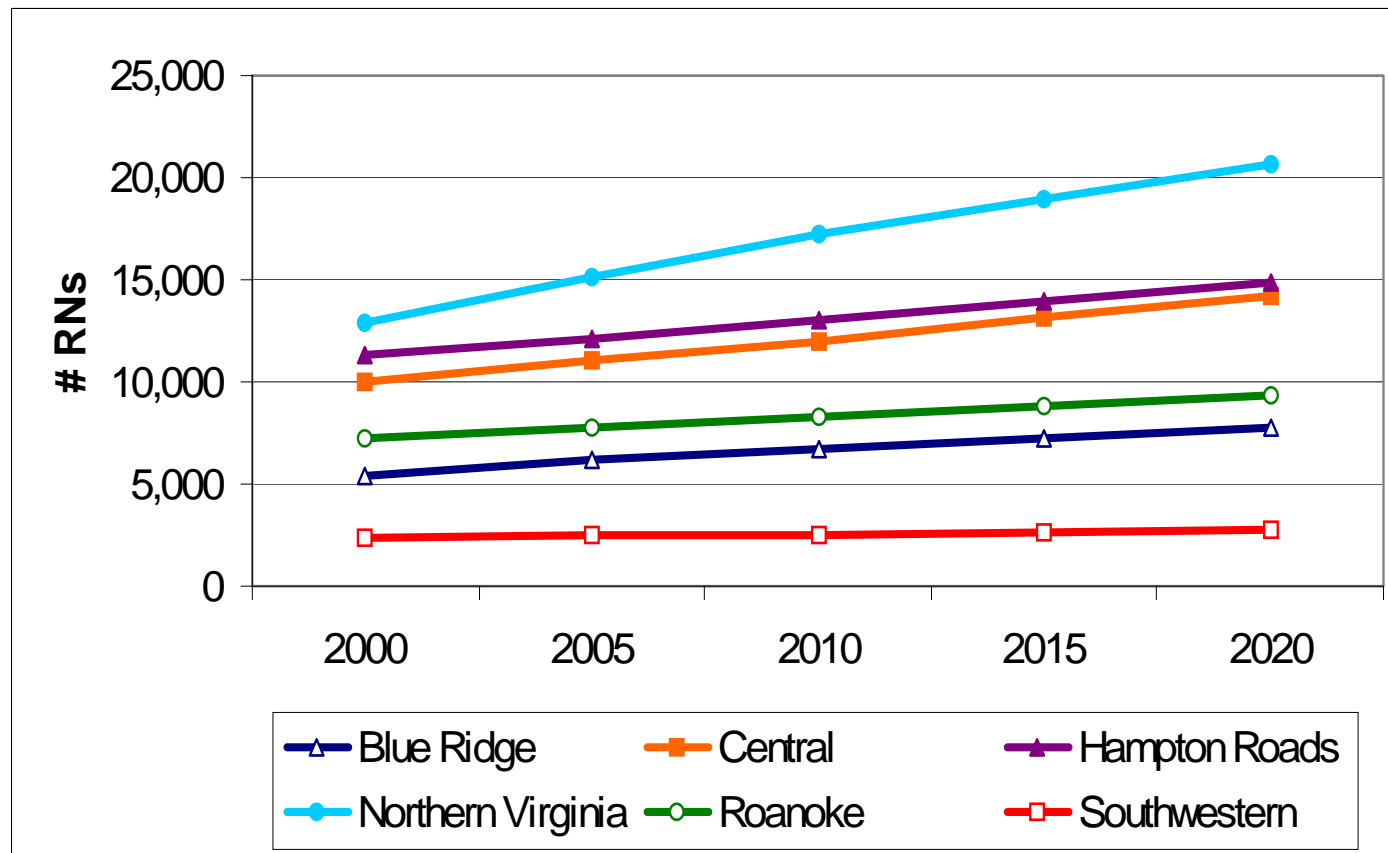
Data Source: Virginia NDM Projections, CHPRE

Virginia RN Supply by Region 2000-2020

Number of RN Education Programs by Region

Region	ADN	BSN	Diploma	MSN	PhD
Blue Ridge	4	4		2	1
Central	3	1	2	1	1
Hampton Roads	4	4	2	3	1
Northern	2	2		2	1
Roanoke	4	4	2	2	
Southwestern	3	1			
Total	20	16	6	10	4

Source: Survey of RN Education
Programs, 2002

Virginia RN Programs 2002

| Region Name	Schools	BASIC DEGREE PROGRAMS			ADVANCED DEGREE PROGRAMS		
		Enrollment	Graduated	Rejected*	Enrollment	Graduated	Rejected*
Blue Ridge	8	988	360	107	419	230	0
Central	5	1,199	390	124	720	138	21
Hampton Roads	8	1,208	437	307	692	214	0
Northern Virginia	3	1,202	430	280	1,022	289	240
Roanoke	8	926	322	16	116	18	0
Southwestern	4	515	198	563	0	0	0
Total	**36**	**6,038**	**2,137**	**1,397**	**2,969**	**889**	**261**

Data Source: AACN, GMU RN
Program Survey 2003

Commonwealth of Virginia RN FTE Shortage Projections Through 2020
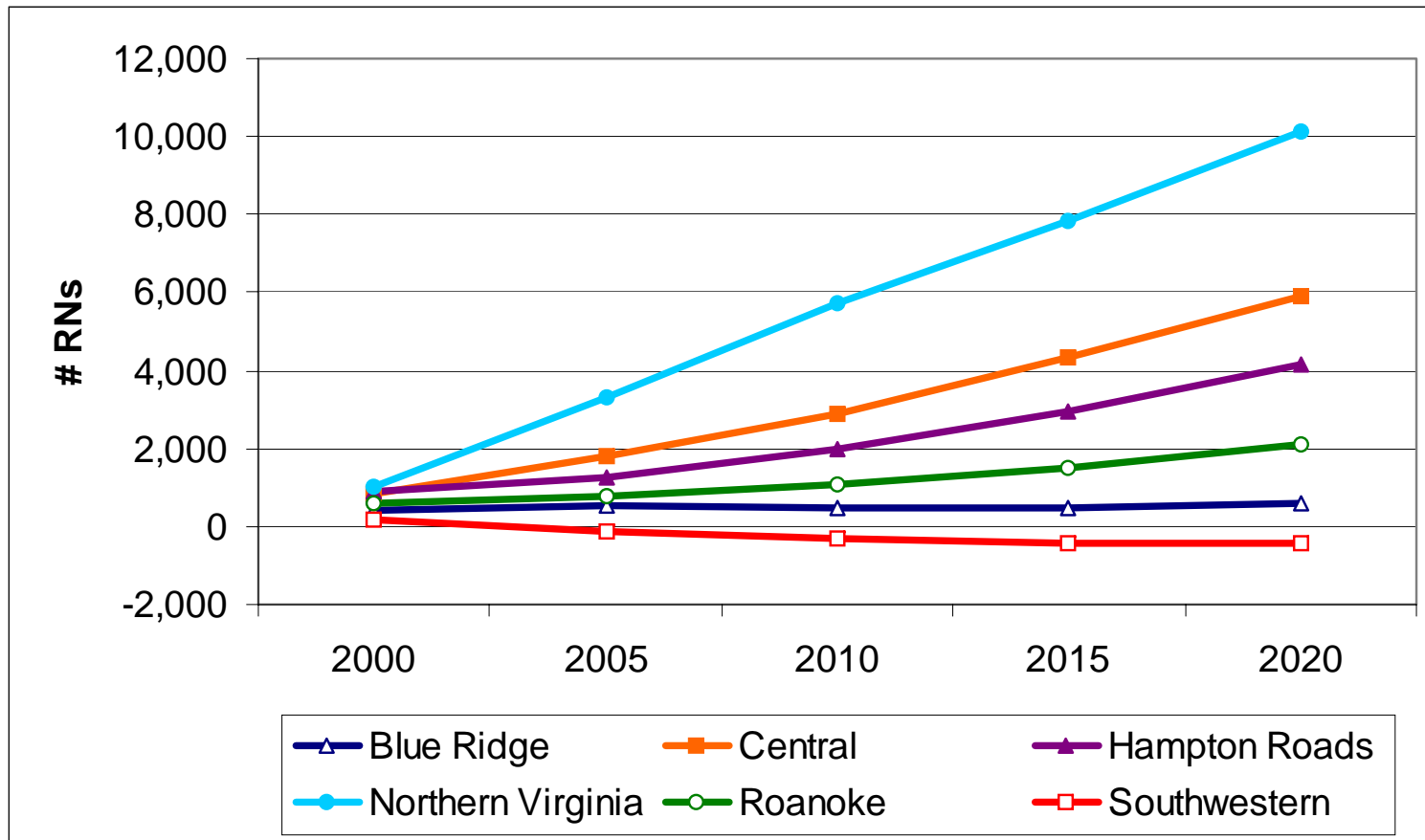
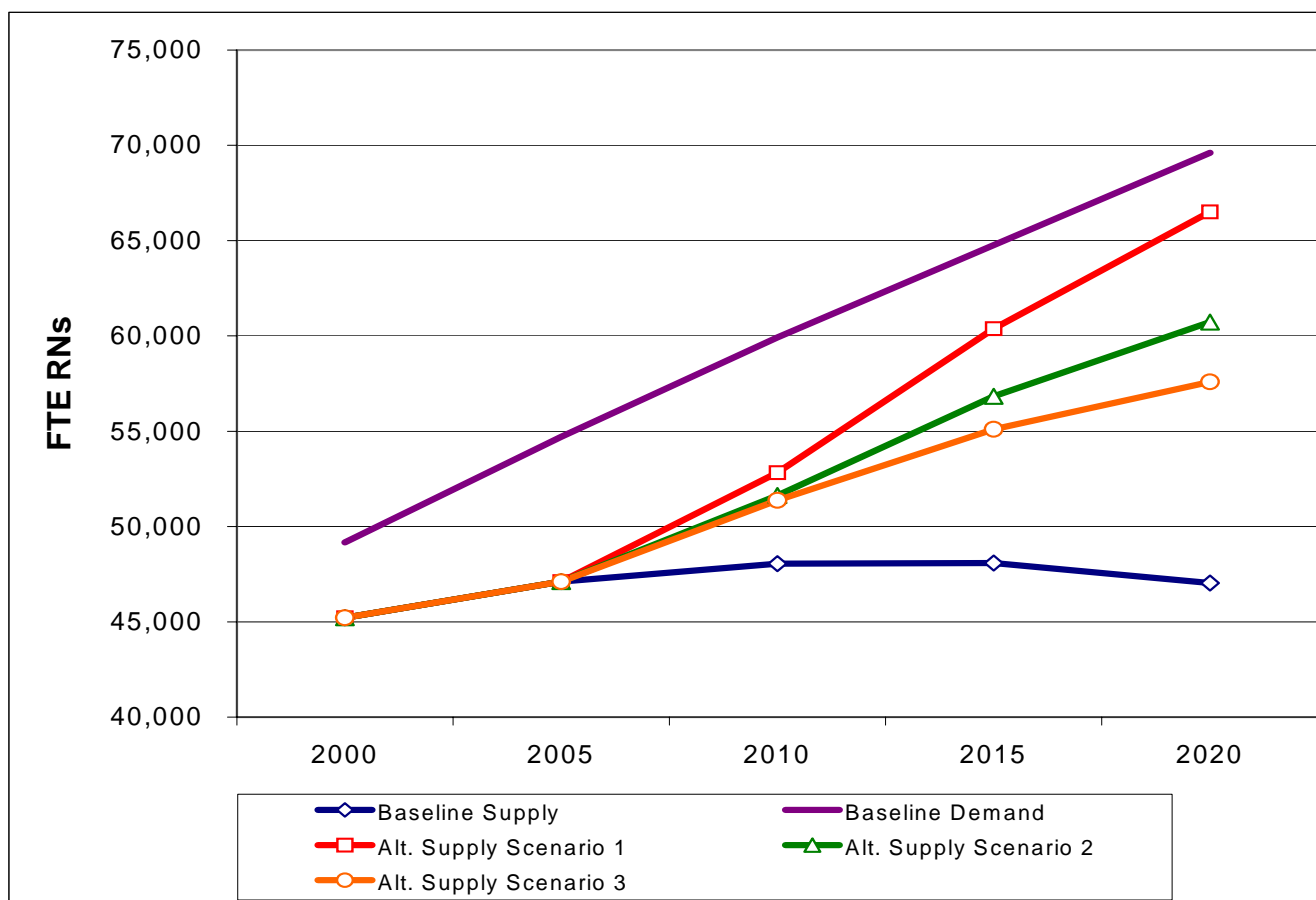**Data Source: Projections from the National Center for Health Workforce Analysis, BHPr, HRSA, Nursing Demand and Supply Models adapted for Virginia.**

Unfilled Demand for RNs in Adjacent States and U.S.
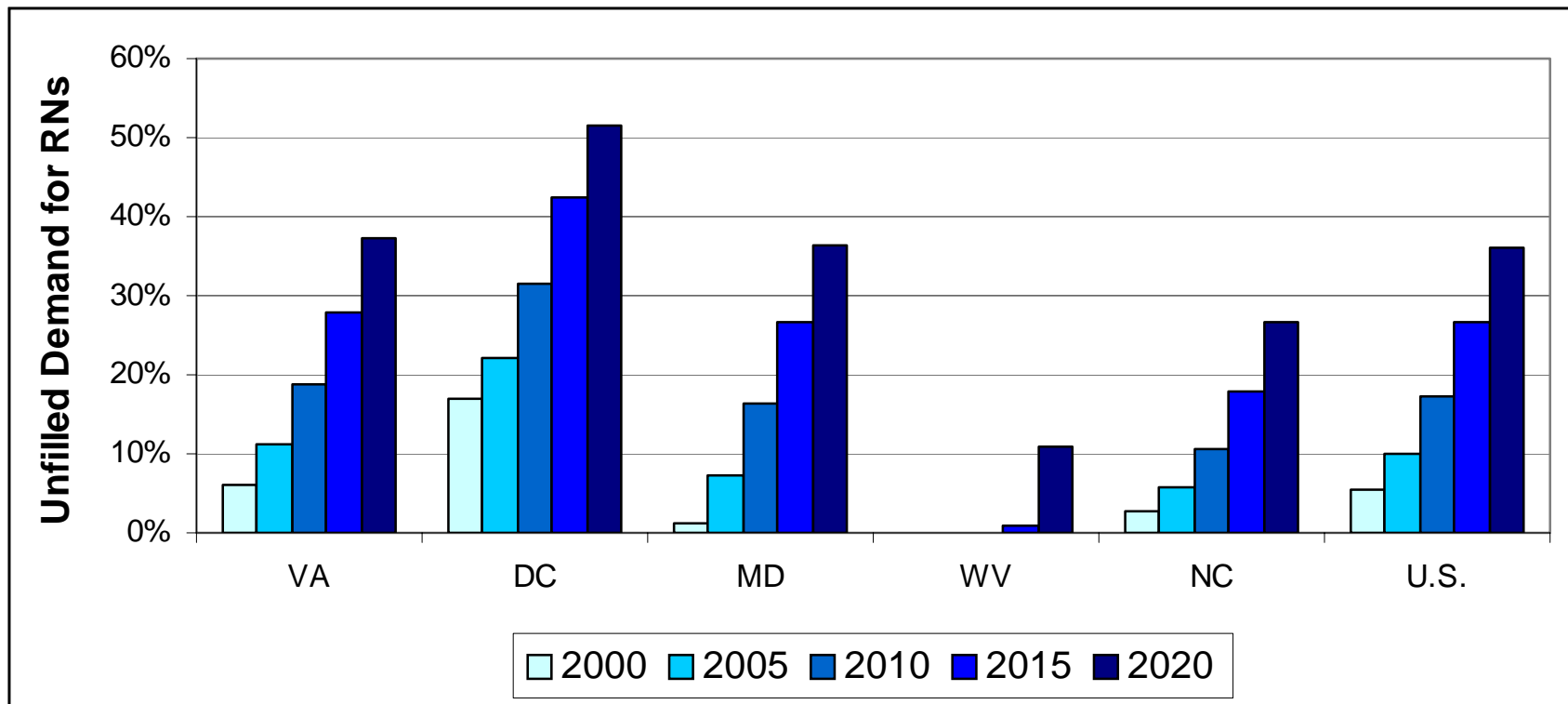
Data Source: National Center for Health Workforce Analysis, BHPr, HRSA

RN Supply Projections for Different Scenarios

Data Source: Projections from the National Center for Health Workforce Analysis, BHPr, HRSA, Nursing Demand and Supply Models adapted for Virginia.

2020 Virginia RN Projections …
What they Mean

- **Demand for FTE RNs will exceed 70,000**

- **Supply for FTE RNs will be 47,000**

- **Projected FTE RN shortage will exceed 23,000 (32% of Demand)**

RN Supply Demand Analysis Findings

- Virginia has growing shortage of RNs relative to demand (worsens over time)
  - *Shortage Basic (new RNs) & Nursing Faculty* is acute and increasing
  - *RN shortage N. Va & Hampton Rd* regions greatest

- RN education pipeline is inadequate to meet projected basic RN demand
  - *Number of qualified RN applicants exceeds* programs' capacities

Virginia Full Time Faculty Mean Age by Region
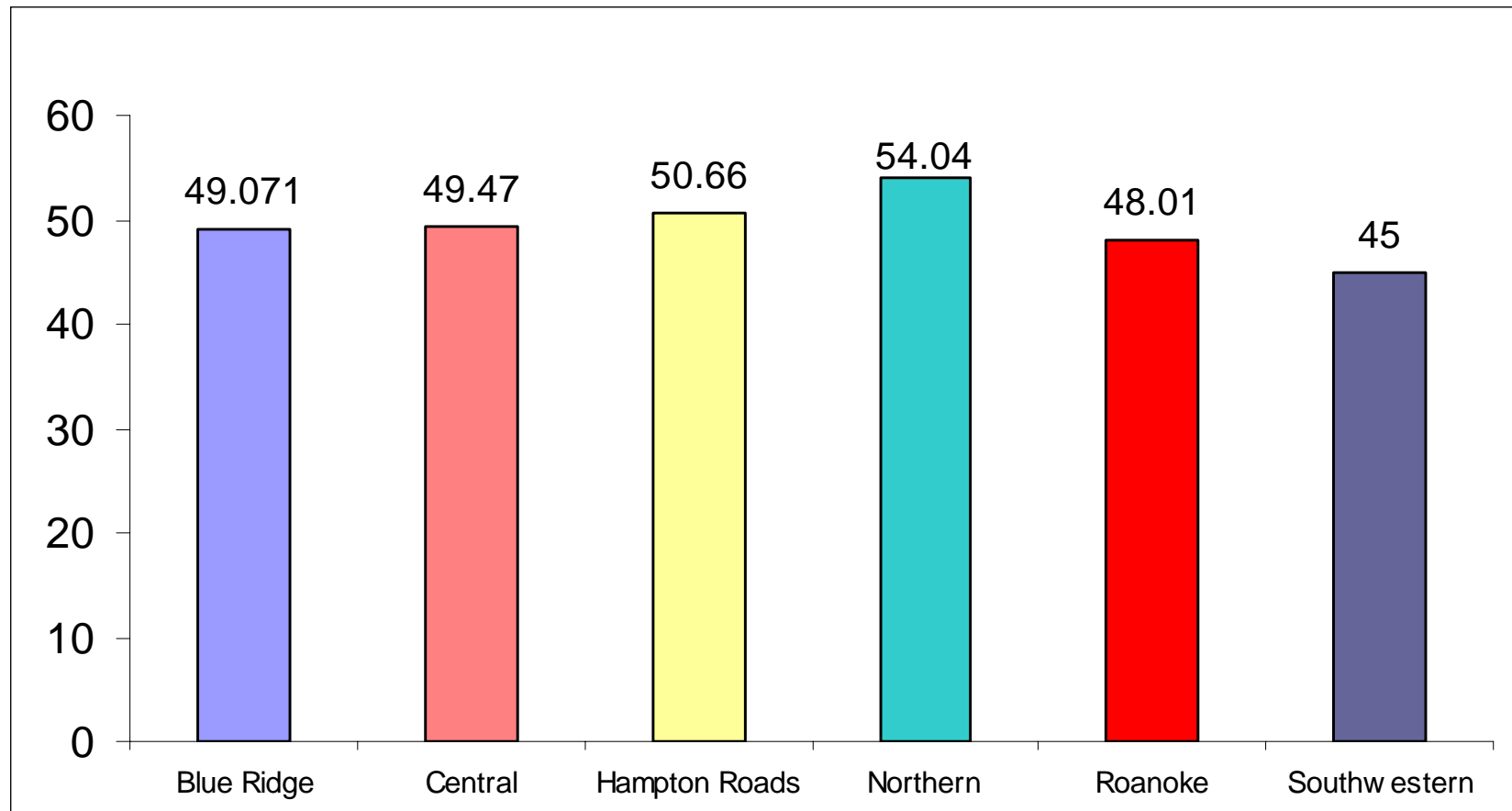
Data Source: SCHEV Nursing
Salary Study 2002

Factors Affecting RN Education Programs' Ability to Meet Projected Demand

- **Nursing school capacity/student enrollment issues**
  - *Qualified applicants increasingly "rejected"*

- **Key reasons qualified applicants are not accepted:**
  - *Insufficient # of nursing faculty*
  - *Limited physical capacity: admission slots, classrooms, clinical sites, & preceptors*

Data Source: AACN, GMU Survey
of RN Programs 2002

Factors Associated with Securing Sufficient RN Faculty

Majority of responding schools indicate an inability to recruit qualified faculty due to:

- *Increased competition for faculty applicants* (taking jobs in with other sectors)
- *Insufficient funds to hire* new staff

Most schools identify adverse affects from:

- *Aging faculty*, increasing faculty retirements and resignations (outpacing ability to fill faculty vacancies)
- *Rural geographic area*
- *Inadequate training of faculty applicants* as educators

Data Source: AACN, GMU Survey
of RN Programs 2002

State Council on Higher Education in Virginia: Reports on Study Findings and Strategic Plan

http://healthresearch.gmu.edu/

SCHEV Report

Condition of Nursing and Nursing Education in the Commonwealth

January 2004

A SCHEV Report

Strategic Plan and Recommendations to Ensure an Adequate Supply of Nurses in Virginia

PRESENTED TO

THE HONORABLE MARK R. WARNER
GOVERNOR OF VIRGINIA
AND
MEMBERS OF THE GENERAL ASSEMBLY

March 2004

Policy Implications

- **Common themes across the regions, but this is not a one size fits all problem**

- **Adjacent states' RN shortages are expected to contribute to the Virginia shortage**

- **Competition for experienced nurses between sectors (especially education and service) will increase**
- **Need to increase basic RN Education program capacity**
  - *High proportion of RNs work in region educated*
- **Need to prepare more faculty *NOW***
  - *faculty shortages limit RN program expansion*

SCHEV Strategic Plan

EXECUTIVE SUMMARY

The shortage of nurses in Virginia is a condition that continues to threaten the stability of the Commonwealth's healthcare system. If current trends continue, the demand for full-time-equivalent registered nurses (FTE RNs) in Virginia is projected to be 69,600 by the year 2020, while supply is anticipated to reach only 47,000 (see Appendix B). Without action, Virginia will be short 22,600 FTE RNs in sixteen years (32% shortfall).

To assist the General Assembly and the Governor in selecting a set of actions to ensure an adequate supply of nurses in the Commonwealth, the State Council of Higher Education for Virginia (SCHEV), in association with members of the healthcare community including the Advisory Council on the Future of Nursing in Virginia and the Virginia Board of Nursing, as well as institutions of higher education present *Strategic Plan and Recommendations to Ensure an Adequate Supply of Nurses in Virginia*. The plan includes specific strategies for achieving the following four objectives:

(1) increase the current number of nursing faculty: 15% in two years and an additional 35% within 12 years;

(2) expand institutions' capacity to prepare students in basic (LPN & RN) nursing programs by: 15% more students in two years and an additional 35% within 12 years;

(3) increase the number of graduates from basic (LPN & RN) and advanced degree nursing programs by: 15% in five years and an additional 35% within 15 years;

(4) improve retention of Virginia nurses in the workforce.

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Dr. P.J. Maddox: **pmaddox@gmu.edu**